



gaattcatctgtcgactgtaccacgggaggtccccggagaaggatcctgcagccccgagt 60  
cccaggataaagcttgggttcatcctccttccctggatccactccacagtcctcaggct 120  
tccccaatccagggtcggactcggcgccgggacgtgctATGGACGACATTTTCACCTCAGTGC 180  
CGGAGGGCAACGCAGTCGCCGCTTCGCCCTGTGGCTGGACAACACGGAGAACGACCTCAAC 8  
R E G N A V A V R L W L D N T E N D L N 240  
CAGGGGACGATCATGGCTTCTCCCCCTTGCACTGGCCCTGCCGAGAGGCCGCTCTGCT 28  
Q G D D H G F S P L H W A C R E G R S A 300  
GTGGTTGAGATGTTGATCATGCGGGGGCACGATCAATGTAATGAACCGTGGGGATGAC 48  
V V E M L I M R G A R I N V M N R G D D 360  
ACCCCCCTGCATCTGGCAGCCAGTCATGGACACCCGTGATATTGTACAGAAGCTATTGCAG 68  
T P L H L A A S H G H R D I V Q K L L Q 420  
TACAAGGCAGACATCAATGCAGTGAATGAACACGCGGAATGTGCCCCCTGCACCTATGCCTGT 88  
Y K A D I N A V N E H G N V P L H Y A C 480  
TTTGGGGCCAAGATCAAGTGGCAGAGGACCTGGTGGCAAAATGGGGCCCTTGTTCAGCATC 108  
F W G Q D Q V A E D L V A N G A L V S I 540  
TGTAACAAGTATGGAGAGATGCCCTGTGGACAAGCCAGGCCCCCTGAGAGAGCTTCTC 128  
600

Fig. 1a (Seq. ID. NO. 1)  
(continued on page 2/23)



C N K Y G E M P V D K A K A P L R E L L 148  
CGAGCGGCAGAGAAGATGGGCCAGAATCTCAACCGTATTCATACAAGGACACATTC 660  
R E R A E K M G Q N L N R I P Y K D T F 168  
TGAAGGGACCCGCACTCGGCCCGAATGGAACCCCTGAACAACACTCTGGCAT 720  
W K G T R T R P R N G T L N K H S G I 188  
GACTCAACAGCTTAACCTTCTGACGAAGCTCAACGAGAATCACTCTGGAGAGCTATGG 780  
D F K Q L N F L T K L N E N H S G E L W 208  
AAGGCCGCTGGCAGGCAATGACATTGTCTGTAAGGTGCTGAAGTTCGAGACTGGAGT 840  
K G R W Q G N D I V V K V L K V R D W S 228  
ACAAGGAAGAGCAGGACTTCAATGAAGAGTGTCCCGGCTCAGGATTTTCTCGCATCCA 900  
T R K S R D F N E C P R L R I F S H P 248  
AATGTGCTCCAGTGCTAGTGCCCTGCCAGTCTCCACCTGCTCCTCATCCTACTCTCATC 960  
N V L P V L G A C Q S P P A P H P T L I 268  
ACACACTGGATGCCGTATGGATCCCTCTACAATGTACTACATGAAGGCACCAATTTCGTC 1020  
T H W M P Y G S L Y N V L H E G T N F V 288  
GTGGACCAGAGCCAGGCTGTGAAGTTTGCTTTGGACATGGCAAGGGCATGGCCTTCCTA 1080  
V D Q S Q A V K F A L D M A R G M A F L 308  
CACACACTAGAGCCCTCATCCACGACATGCACCTCAATAGCCGTAGTGAATGATTGAT 1140  
H T L E P L I P R H A L N S R S V M I D 328

Fig. 1a (SEQ. ID. NO. 1)  
Continued on page 3/23



GAGGACATGACTGCCCGAATTAGCATGGCTGATGTCAAGTTCTCTTCCAAATGTCCTGGT 1200  
E D M T A R I S M A D V K F S F Q C P G 348  
CGCATGTATGCACCTGCCTGGTAGCCCCCGAAGCTCTGCAGAAGAAGCCTGAAGACACA 1260  
R M Y A P A W V A P E A L Q K K P E D T 368  
AACAGACGCTCAGCAGACATGTGGAGTTTTCAGTGTCTGTGGAACTGGTGACACGG 1320  
N R R S A D M W S F A V L L W E L V T R 388  
GAGTACCCCTTGCTGACCTCTCCAATATGGAGATTGGAATGAAGTGGCATTTGGAAGGC 1380  
E V P F A D L S N M E I G M K V A L E G 408  
CTTCGGCCTACCATCCACAGGTATTTCCCTCATGTGTGTAAGCTCATGAAGATCTGC 1440  
L R P T I P P G I S P H V C K L M K I C 428  
ATGAATGAAGACCTGCAAGCGACCCAAATTGACATGATTGTGCCTATCCTTGAGAAG 1500  
M N E D P A K R P K F D M I V P I L E K 448  
ATGCAGGACAAGtaggactggaaggctccttgccctgaactccagaggtgtcgggacatggt 1560  
M Q D K \*  
  
tgggggaatgcacctccccaaagcagcaggcctctgggtgcctccccgcctccagtcac 1620  
ggtactaccagcctggggtccatcccttcccccatccctaccactgtgcgcaagagg 1680  
ggcgggctcagagcttctgcaactgccaacatggtgtctcccaacatgggagggatcagcc 1740  
ccgcctgtcacaataaagtttattatgaaaaaaaaaaaaaaaaaaaaa 1789

FIG. 1a (SEQ. ID. NO. 1)  
continuation from page 3/23



Csk	. NMKELKLLQ	TIGKGEFGDV	MLGDYRGN. K	VAVKCIKND	TAQ. . . . . AF (SEQ. 10. NO. 15)
Yes	IPRESLRLEV	KLGGCGCFGEV	WMGTWNGTTK	VAIKTLKPGT	MMPEAFLO. . (SEQ. 10. NO. 4)
Ctr1	IPWCDLNIKE	KIGAGSFGTV	HRAEWHGS. D	VAVKILMEQD	FHAE. RVNEF (SEQ. 10. NO. 5)
B-raf	IPDGQITVGQ	RIGSGSFGTV	YKQKWHG. . D	VAVKMLNVTA	PTPQQ. LQAF (SEQ. 10. NO. 6)
Ilk	IDFKQLNFLT	KLNENHSGEL	WKGRWQGN. D	IVVKVLDKVR	DWSTRKSRDF (SEQ. 10. NO. 16)

III

IV

Csk	LAEASVMTQ	LRHSNLVQLL	GVIVEE. KGG	LYIVTEYMAK	GSLVDYLRSR
Yes	. . . EAQIMKK	LRHDKLVPLY	AVVSEE. . . P	IYIVTEFMTK	GSLDLFLKEG
Ctr1	LREVAIMKR	LRHPNIVLFM	CAVTQPP. . N	LSIVTEYLSR	GSLYRLLHKS
B-raf	KNEVGVLRK	TRHVNILLFM	GYSTKP. . . Q	LAIVTQWCEG	SSLYHHHLHI
Ilk	NEECPRLRI	FSHPNVLPVL	GACQSPAPH	PTLITHWMPY	GSLYNVLHE.

V

Csk	GRSV. LGGDC	LLKFSLDVCE	AMEYLEGN. .	NFVHRDLAA	RNVLVS. E
Yes	EGKF. LKLPQ	LVDMAAQIAD	GMAYIERM. .	. NYIHRDLRA	ANILVG. D
Ctr1	GAREQLDERR	RLSMAYDVAK	GMNYLH. NRN	PPIVHRDLKS	PNLLV. DK
B-raf	ETKFEMI. . K	LIDIARQTAQ	GMDYLHAK. .	. SIIHRDLKS	NNIFLH. E
Ilk	GTNFFVVDQSQ	AVKFALDMAR	GMAFLH. TLE	PLIPRHALNS	RSVMI. DE

Via

Vib

283

329

Fig. 1b (continued on page 5/23)



VII  
Csk DNVAKVSDEG LTK.....EA SSTQDTGKLP VKWTAPEALR ...EKKFSTK (SEQ. 1D. NO. 15)  
Yes NLVCKIADEG LARLIED.NE YTAQQAQKFP IKWTAPEAAL ...YGRFTIK (SEQ. 1D. NO. 4)  
Ctrl KYTVKVCDFG LSRLKAS.TF LSSKSAAGTP .EWMapeVLR ...DEPSNEK (SEQ. 1D. NO. 5)  
B-raf DLTVKIGDEG LATVKSRSWSG SHQFEQLSGS ILWMAPEVIR MQDKNPYSFQ (SEQ. 1D. NO. 6)  
Ilk DMTARIS... MADVKFSFQC PGRM.YA..P .AWVAPEALQ KKPEDTNRSS (SEQ. 1D. NO. 16)

IX  
Csk SDVWSFGILL WEIYSFGRVP YPRIPLKD.V VPRVEKGY.. KMDAPDGCPP  
Yes SDVWSFGILL TELVTKGRVP YPGMVNRE.V LEQVERGY.. RMPCPQGCPE  
Ctrl SDVYSFGVIL WELAT.LQQP WGNL.NPAQV VAAVGFCK. RLEIPRNLP  
B-raf SDVYAFGIVL YELMT.GQLP YSNINNRDQI IFMVGRGYLS PDLKVRNSC  
Ilk ADMWSFAVLL WELVTR.EVP FADLSNMEIG MK.VALEGL. R.TIPPGISP 418

XI  
Csk AVYEVMKN CWHLDAAMRP SFLQLEQLE HIKTHEL  
Yes SLHELMKL CWKKDPDERP TFEYIQSFLE .....  
Ctrl QVAAIIEG CWTNEPWKRP SFATIMDLLR PL.....  
B-raf PKAMKRLMAECLKKRDERP LFPQILASIE LLARSLP  
Ilk HVCKLMKI CMNEDPAKRP KFDMIVPILE KMQDK..

451

Fig. 1b



ANKYRIN  
CONSENSUS

-G-TPLH-AA--GH---V---LL--GA--N----- (SEQ. ID. NO. 17)  
A D

ANK1  
ANK2  
ANK3  
ANK4

<sup>33</sup>HGFSPLHWACREGRSAVVEMLMRGARINVMNR (SEQ. ID. NO. 18)  
GDDTPLHLAASHGHRDIVQKLLQYKADINAVNE (SEQ. ID. NO. 19)  
HGNVPLHYACFWGQDQVAEDLVANGALVSICNK (SEQ. ID. NO. 20)  
YGEMPVDKAKAPLRELLRERAEKMGQNLNRI PY<sup>164</sup> (SEQ. ID. NO. 21)

Fig. 1c